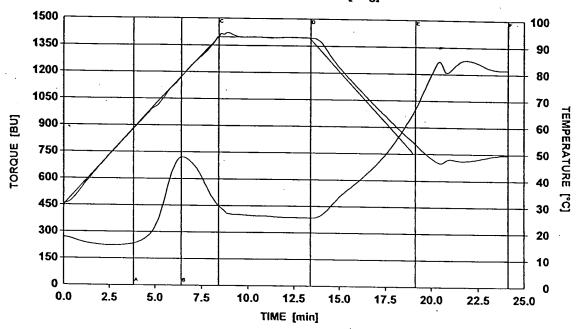


## **BRABENDER MICRO VISCO-AMYLO-GRAPH**

### **Parameter**

| Operator Sample Moisture Sample weight Water Note Note            | : | ar<br>PO 28982-11 Dec 4<br>14 [%]<br>40 [g]<br>80 [ml]<br>ADM MILLING CO.<br>MVAG SER #010102 | Date Method Correction Corr. to 14% Corr. to 14%                      | : : : :                                 | 12/4/2003<br>33% Full Chart<br>14 [%]<br>40 [g]<br>80 [ml] |
|---|---|---|---|---|--|
| Speed<br>Start temperature<br>Max. temperature<br>End temperature | : | 300 [1/min]<br>30 [°C]<br>93 [°C]<br>50 [°C]  | Meas. range<br>Heat./Cool. rate<br>Upp. hold. time<br>Fin. hold. time | : | 135 [cmg]<br>7.5 [°C/min]<br>5 [min]<br>5 [min]            |

### **MEASURING RANGE: 135 [cmg]**



| Point | Name                        | Time<br>[HH:MM:SS] | Torque<br>[BU] | Temperature<br>[°C]                              |
|-------|-----------------------------|--------------------|----------------|--|
| Α     | Beginning of gelatinization | 00:03:50           | 233            | 58.4   |
| В     | Maximum viscosity           | 00:06:25           | 720            | 77.8   |
| С     | Start of holding period     | 00:08:24           | 447            | 92.7   |
| D     | Start of cooling period     | 00:13:24           | 383            | 92.9   |
| E     | End of cooling period       | 00:19:08           | 1003           | 53.5   |
| F     | End of final holding period | 00:24:08           | 1223           | 49.6   |
| B-D   | Breakdown                   |                    | 337            | 43.0   |
| E-D   | Setback                     |                    | 607            | <del>                                     </del> |

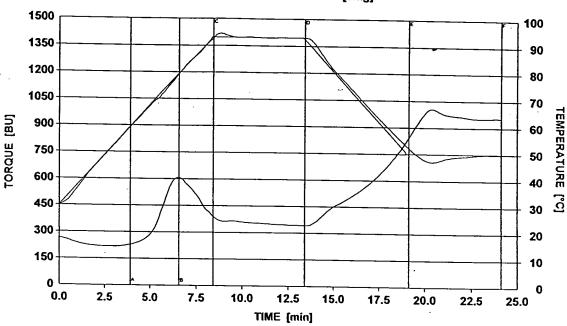
Fig. 3

## BRABENDER MICRO VISCO- AMYLO- GRAPH

#### <u>Parameter</u>

| Operator Sample Moisture Sample weight Water Note Note            | :                                       | ar<br>PO 28983-11 Dec 5<br>14 [%]<br>40 [g]<br>80 [ml]<br>ADM MILLING CO.<br>MVAG SER.#010102 | Date Method Correction Corr. to 14% Corr. to 14%                      | : :         | 12/5/2003<br>33% Full Chart<br>14 [%]<br>40 [g]<br>80 [ml] |
|---|---|---|---|-------------|--|
| Speed<br>Start temperature<br>Max. temperature<br>End temperature | : | 300 [1/min]<br>30 [°C]<br>93 [°C]<br>50 [°C]  | Meas. range<br>Heat./Cool. rate<br>Upp. hold. time<br>Fin. hold. time | :<br>:<br>: | 135 [cmg]<br>7.5 [°C/min]<br>5 [min]<br>5 [min]            |

### MEASURING RANGE: 135 [cmg]



| Point      | Name                        | Time       | Torque | Temperature |
|------------|-----------------------------|------------|--------|-------------|
|            |                             | [HH:MM:SS] | (BU)   | i°C1        |
| _ <u>A</u> | Beginning of gelatinization | 00:03:55   | 227    | 59.1        |
| <u>B</u>   | Maximum viscosity           | 00:06:35   | 606    | 79.1        |
| С          | Start of holding period     | 00:08:24   | 388    | 92.7        |
| D          | Start of cooling period     | 00:13:24   | 341    | 92.9        |
| E          | End of cooling period       | 00:19:08   | 845    | 52.1        |
| F          | End of final holding period | 00:24:08   | 953    | 49.9        |
| B-D        | Breakdown                   |            | 265    | 43.3        |
| E-D        | Setback                     |            | 493    | <del></del> |

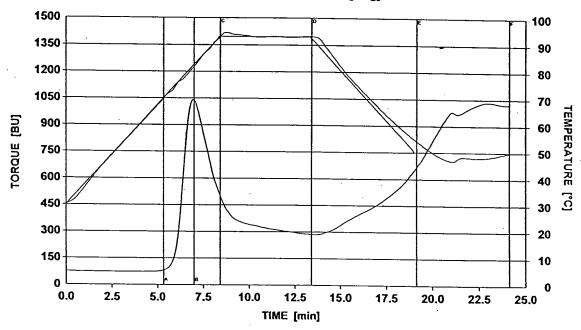
Fig. 4

## **BRABENDER MICRO VISCO-AMYLO-GRAPH**

### **Parameter**

| Operator Sample Moisture Sample weight Water Note Note   | : | ar PO 28975-95 Dec 3 14 [%] 17 [g] 100 [ml] ADM MILLING CO. | Date Method Correction Corr. to 14% Corr. to 14%                      | : | 12/3/2003<br>LC-295 Full<br>14<br>17<br>100 | [%]<br>[g]<br>{ml] |
|--|---|---|---|---|---|--------------------|
| Speed Start temperature Max. temperature End temperature | :                                       | MVAG SER.#010102  300 [1/min] 30 [°C] 93 [°C] 50 [°C]       | Meas. range<br>Heat./Cool. rate<br>Upp. hold. time<br>Fin. hold. time | : | 135<br>7.5<br>5<br>5                        | £ 31               |

### MEASURING RANGE: 135 [cmg]



| Point | Name                        | Time       | Torque | Temperature                                      |  |
|-------|-----------------------------|------------|--------|--|--|
|       |                             | [HH:MM:SS] | [BÙ]   | I°C1   |  |
| Α     | Beginning of gelatinization | 00:05:20   | 80     | 69.8   |  |
| В     | Maximum viscosity           | 00:07:00   | 1041   | 81.6   |  |
| С     | Start of holding period     | 00:08:24   | 498    | 92.9   |  |
| D     | Start of cooling period     | 00:13:24   | 285    | 93.1   |  |
| E     | End of cooling period       | 00:19:08   | 671    | 54.0   |  |
| F     | End of final holding period | 00:24:08   | 1021   | 49.8   |  |
| B-D   | Breakdown                   |            | 754    | 10.0   |  |
| E-D   | Setback                     |            | 372    | <del>                                     </del> |  |

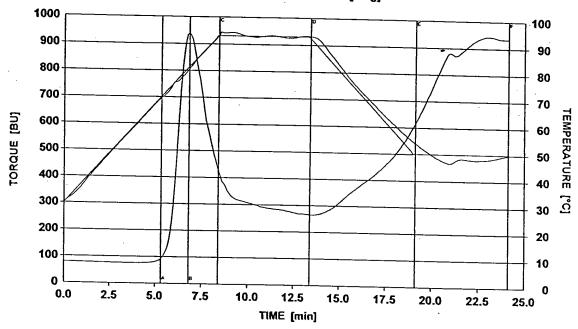
Fig. 5

# BRABENDER MICRO VISCO-AMYLO-GRAPH

### <u>Parameter</u>

| Operator Sample Moisture Sample weight Water Note Note            | : | ar<br>PO 28981-95 Dec 4<br>14 [%]<br>17 [g]<br>100 [ml]<br>ADM MILLING CO.<br>MVAG SER.#010102 | Date Method Correction Corr. to 14% Corr. to 14%                      | : | 12/4/2003<br>LC295, 135 cmg<br>14 [%]<br>17 [g]<br>100 [ml] |
|---|---|--|---|---|---|
| Speed<br>Start temperature<br>Max. temperature<br>End temperature | :                                       | 300 [1/min]<br>30 [°C]<br>93 [°C]<br>50 [°C]   | Meas. range<br>Heat./Cool. rate<br>Upp. hold. time<br>Fin. hold. time | :<br>:<br>:                             | 135 [cmg]<br>7.5 [°C/min]<br>5 [min]<br>5 [min]             |

### MEASURING RANGE: 135 [cmg]



| Point      | Name                        | Time<br>[HH:MM:SS] | Torque<br>[BU] | Temperature |
|------------|-----------------------------|--------------------|----------------|-------------|
| _A         | Beginning of gelatinization | 00:05:20           | 91             | 69.6        |
| _ <u>B</u> | Maximum viscosity           | 00:06:50           | 939            | 80.4        |
| <u> </u>   | Start of holding period     | 00:08:24           | 424            |             |
| D          | Start of cooling period     | 00:13:24           | 265            | 92.9        |
| _E         | End of cooling period       | 00:19:08           | 619            | 93.1        |
| F          | End of final holding period | 00:24:08           |                | 53.9        |
| B-D        | Breakdown                   | 00.24.00           | 934            | 49.8        |
| E-D        | Setback                     |                    | 674            | <b>_</b>    |
|            | _ <del></del>               | —_ <del>_</del>    | 342            | 1           |

Fig. 6